iMcV-LIM 10/100

Operation Manual

FCC Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class B computing device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which the user will be required to correct the interference at his own expense.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

The use of non-shielded I/O cables may not guarantee compliance with FCC RFI limits. This digital apparatus does not exceed the Class B limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe B prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.

Warranty

IMC Networks warrants to the original end-user purchaser that this product, EXCLUSIVE OF SOFTWARE, shall be free from defects in materials and workmanship under normal and proper use in accordance with IMC Networks' instructions and directions for a period of six (6) years after the original date of purchase. IMC Networks warrants to the original end-user purchaser that all SFPs shall be free from defects in materials and workmanship under normal and proper use in accordance with IMC Networks' instructions and directions for a period of one (1) year after the original date of purchase. This warranty is subject to the limitations set forth below.

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To receive in-warranty service, the defective product must be received at IMC Networks no later than the end of the warranty period. The product must be accompanied by proof of purchase, satisfactory to IMC Networks, denoting product serial number and purchase date, a written description of the defect and a Return Merchandise Authorization (RMA) number issued by IMC Networks. No products will be accepted by IMC Networks which do not have an RMA number. For an RMA number, contact IMC Networks at PHONE: (800) 624-1070 (in the U.S. and Canada) or (949) 465-3000 or FAX: (949) 465-3020. The end-user shall return the defective product to IMC Networks, freight, customs and handling charges prepaid. End-user agrees to accept all liability for loss of or damages to the returned product during shipment. IMC Networks shall repair or replace the returned product, at its option, and return the repaired or new product to the end-user, freight prepaid, via method to be determined by IMC Networks. IMC Networks shall not be liable for any costs of procurement of substitute goods, loss of profits, or any incidental, consequential, and/or special damages of any kind resulting from a breach of any applicable express or implied warranty, breach of any obligation arising from breach of warranty, or otherwise with respect to the manufacture and sale of any IMC Networks product, whether or not IMC Networks has been advised of the possibility of such loss or damage.

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About the iMcV-LIM 10/100

The iMcV-LIM is an SNMP-manageable, IEEE 802.3 single-conversion media conversion module which converts between:

- 10Base-T twisted pair and 10Base-FL multi-mode or single-mode fiber, or
- 100Base-TX twisted pair and 100Base-SX multi-mode fiber, 100Base-FX single-mode fiber or single-strand single-mode fiber.

The iMcV-LIM requires one slot in an SNMP-manageable chassis or an unmanaged chassis from IMC Networks. The iMcV-LIM features one RJ-45 connector and one pair of ST or SC fiber connectors.

Configuring Instructions

The iMcV-LIM has user-configurable features (e.g., FiberAlert (FA), Link Fault Detection (LFD) and Auto Negotiation (AN). Refer to the iMcV Module DIP Switch Configuration Table for information on available features. Instructions for configuring both managed (via an SNMP-compatible management application like iView^2) and unmanaged modules follow.

Installing an iMcV-LIM 10/100

The iMcV Modules install in IMC Networks' SNMP manageable iMediaChassis series or in any MediaChassis.

NOTE
All modules are hot-swappable.

To install an iMcV Modules:

1. Remove the blank bracket covering the slot where the module is to be installed by removing the screws on the outside edges of the bracket.
2. Slide the iMcV Modules into the chassis, via the cardguides, until the module is seated securely in the connector.
3. Secure the module to the chassis by tightening the captive screw.
4. Save any "blanks" removed during installation for future use if the configuration requirements change.

Managed Modules

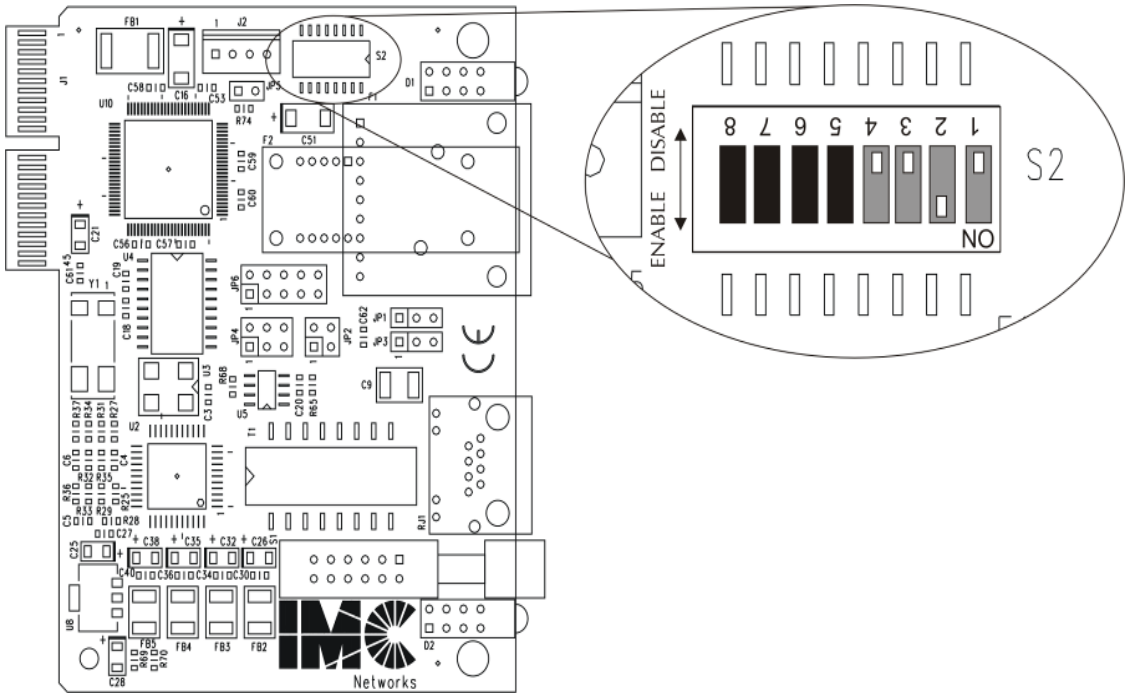
To manage one or more iMcV-LIM(s), an SNMP agent must be present in the chassis. To configure Managed Modules, install the module first, and then configure using the management software.

NOTE
Management software overrides any hardware settings (e.g., jumper, switch, etc.); a module must be configured so that it will be managed via the software. Until a module installed in a managed chassis is configured via the software, the module (and its LEDs) may not work properly.

Unmanaged Modules

Before installing, configure the iMcV-LIM modules for desired features. Refer to table which indicates the available features and settings for the iMcV-LIM modules.

After configuring the DIP Switches for the desired settings, install the module and connect the appropriate cables (refer to the Installating an iMcV-LIM 10/100 section for more information).



Dip Switch	Feature	Function	Default
S1	**LFD**	Link fault detection available in forced mode only (S3 is ON)	OFF
S2	**AN**	Auto Negotiation mode (plug-n-play) available when forced mode is disabled (S3 is OFF)	ON
S3	**Force**	Force mode forces the module to operate at 10 or 100 Mbps as determined by S4	OFF
S4	**10/100**	When ON, operates at 10 Mbps. When OFF, operates at 100 Mbps. Available when forced mode is enabled (S3 is ON)	OFF
Remaining DIP Switches are factory configured—DO NOT CHANGE			

Modes of Operation

The iMcV-LIM allows for three modes of operation:

- Auto Negotiation (AN) enabled by default
- Force 10
- Force 100

The module should be configured for one of these modes.

In Auto Negotiation mode, the module will optimally and automatically configure for speed (10 or 100 Mbps) depending on the capabilities of the end stations. To enable Auto Negotiation mode, set switch S2 to the ON position, with switches S3 and S4 in the OFF position.

In Force 10 mode, the module acts as a 10Base-T to 10Base-FL media converter; 100 Mbps signals are not accepted. To enable Force 10 mode, set switch S3 and S4 to the ON position, with switch S2 in the OFF position.

In Force 100 mode, the module acts as a 100Base-TX to 100Base-SX multi-mode or 100Base-FX single-mode fiber media converter; 10 Mbps signals are not accepted. To enable Force 100 mode, set switch S3 to the ON position, with switches S2 and S4 in the OFF position.

Auto Negotiation

When connecting two modules between two end stations (devices such as switches, hubs and repeaters), all devices should ideally support, and be utilizing, Auto Negotiation. While it is possible to have Auto Negotiating devices on one side of the media conversion and fixed (non-Auto Negotiating) devices on the other, link LEDs will react differently depending on where a link fault occurs.

Troubleshooting Features

The iMcV-LIM includes two advanced troubleshooting features, Transparency and Link Fault Detection, to help locate "silent failures" on the network.

Transparency

Transparency is only available when using AN. When the iMcV-LIM is Auto Negotiating, transparency treats the connection between the two end devices as if there were no media converters installed. For example, in a typical application where two media converters are installed between two copper-based switches the twisted pair cables as well as the fiber cable are seen as "one" entity. If a fault occurs on any segment between the two end devices, link LEDs on the end devices will go out.

Since transparency is only available when the iMcV-LIM is operating in Auto Negotiation mode, S2 (AN) must be ON and S1 (LFD), S3 (Force) and S4 (10/100) must be OFF.

Link Fault Detection

Link Fault Detection (LFD) is only available when using Force 10 or Force 100 mode. When LFD is enabled and the input link is down at one interface to the iMcV-LIM, the LFD LED will blink. This applies to both network interfaces and to both data rates. If the link at the other interface to the iMcV-LIM 10/100 is also down, there is no output and LFD causes the Link LED to blink.

When the iMcV-LIM is in one of the Force modes, enable LFD by setting S1 to the ON position. In order for LFD to function properly, Force mode must be enabled by setting S3 to ON with S4 set for the proper speed.

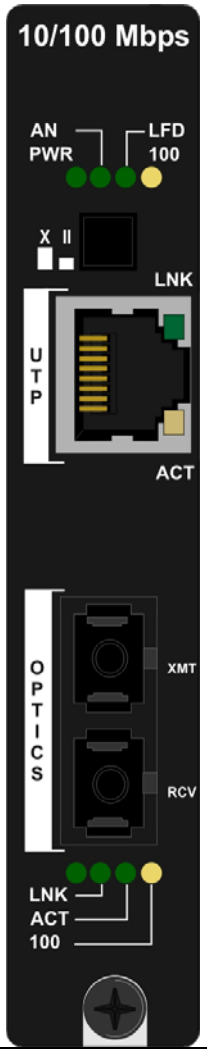
Twisted Pair Crossover/Pass-Through Switch

The iMcV-LIM features a crossover/pass-through push-button switch, located on the faceplate next to the RJ-45 connector, to set the twisted pair connection type. Select a pass-through connection by pressing the push-button IN. A crossover connection is selected when the push-button is OUT. If it is not clear which connection is needed, set the push-button to whatever setting makes the twisted pair LNK LED glow.

LED Operation

The iMcV-LIM features several diagnostic LEDs per port. The LED functions for the iMcV-LIM are

	Twisted Pair Port
LNK	Glows green when a twisted pair link is established.
ACT	Glows yellow when data is detected on the port.
100	Glows yellow when 100 Mbps data is detected on the port.
LFD	Glows green when Link Fault Detection is enabled.
AN	Glows green when Auto Negotiation mode is enabled.
PWR	Glows green when unit has power.
	Fiber Port
100	Glows yellow when 100 Mbps data is detected on the port.
ACT	Glows green when data is detected on the port.
LNK	Glows green when a fiber link is established.



NOTE
Before either LNK LED will glow solid, the twisted pair and fiber optic cables must be connected and the twisted pair crossover/ pass-through switch set correctly.

Link Fault Detection LED Activity

When LFD is enabled and a fault occurs on a segment of the media conversion, the various Link LEDs in that conversion will either blink or extinguish. LEDs may react differently depending on the type of end devices in the conversion, whether the iMcV-LIM is in Force 10 or Force 100 mode, where the fault occurs, etc.

Installation Troubleshooting

- During installation, test the fiber and twisted pair connections with all troubleshooting features disabled, then enable these features, if desired, just before final installation. This will reduce the features' interference with testing.
- LEDs will only function after both twisted pair and fiber are connected.
- To test a module by itself, be sure to have an appropriate fiber patch cable, then follow these steps to test:

Step 1	Connect the media converter to the twisted pair device with a twisted pair cable. The device must be configured to force 100FDX.
Step 2	Loop a single strand of fiber from the transmit port to the receive port of your media converter.
Step 3	Verify that the LNK LED lights for both twisted pair and fiber link.

WARNING
It is possible to create a network loop if connecting the module's twisted pair port to an active network. Be sure to connect the twisted pair cable to a PC when performing this test.

- Make sure to use the appropriate twisted pair cable, and have the crossover/pass-through switch set correctly if a network's converter does not include AutoCross.
- If using a high powered device, which is designed for long distance installations for a short distance installation, the fiber transmitters may overdrive the receivers and cause data loss. In such a case, add an optical attenuator to the connection.

Since single-strand fiber products use optics that transmit and receive on two different wavelengths, single-strand fiber products must be deployed in pairs, or two compatible IMC Networks single-strand fiber products must be connected. The two connected products must also have the same speed and distance capabilities (i.e., both are single-mode [20km] or both are single/PLUS [40km]).

Specifications

Operating Temperature
32° - 104° F (0° - 40° C)

Storage Temperature
20° - 160° F (-20° - 70° C)

Humidity
5 - 95% (non-condensing)

Power Consumption (typical)
650 mA max. @ 5VDC

For fiber optic specifications, visit the IMC Networks Web site.

IMC Networks Technical Support

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Fiber Optic Cleaning Guidelines

Fiber Optic transmitters and receivers are extremely susceptible to contamination by particles of dirt or dust, which can obstruct the optic path and cause performance degradation. Good system performance requires clean optics and connector ferrules.

1. Use fiber patch cords (or connectors, if you terminate your own fiber) only from a reputable supplier; low-quality components can cause many hard-to-diagnose problems in an installation.
2. Dust caps are installed at IMC Networks to ensure factory-clean optical devices. These protective caps should not be removed until the moment of connecting the fiber cable to the device. Should it be necessary to disconnect the fiber device, reinstall the protective dust caps.
3. Store spare caps in a dust-free environment such as a sealed plastic bag or box so that when reinstalled they do not introduce any contamination to the optics.
4. If you suspect that the optics have been contaminated, alternate between blasting with clean, dry, compressed air and flushing with methanol to remove particles of dirt.

Electrostatic Discharge Precautions

Electrostatic discharge (ESD) can cause damage to any product, add-in modules or stand alone units, containing electronic components. Always observe the following precautions when installing or handling these kinds of products

1. Do not remove unit from its protective packaging until ready to install.
2. Wear an ESD wrist grounding strap before handling any module or component. If the wrist strap is not available, maintain grounded contact with the system unit throughout any procedure requiring ESD protection.
3. Hold the units by the edges; do not touch the electronic components or gold connectors.
4. After removal, always place the boards on a grounded, static-free surface, ESD pad or in a proper ESD bag. Do not slide the modules or stand alone units over any surface.

WARNING! Integrated circuits and fiber optic components are extremely susceptible to electrostatic discharge damage. Do not handle these components directly unless you are a qualified service technician and use tools and techniques that conform to accepted industry practices.

Safety Certifications

CE: The products described herein comply with the Council Directive on Electromagnetic Compatibility (89/336/EEC) For further details, contact IMC Networks.

CE

Class 1 Laser product, Luokan 1 Laserlaite,
Laser Klasse 1, Appareil A'Laser de Classe 1

European Directive 2002/96/EC (WEEE) requires that any equipment that bears this symbol on product or packaging must not be disposed of with unsorted municipal waste. This symbol indicates that the equipment should be disposed of separately from regular household waste. It is the consumer's responsibility to dispose of this and all equipment so marked through designated collection facilities appointed by government or local authorities. Following these steps through proper disposal and recycling will help prevent potential negative consequences to the environment and human health. For more detailed information about proper disposal, please contact local authorities, waste disposal services, or the point of purchase for this equipment.

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